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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/631,219	07/28/2003	Richard Scheps	82948	3293

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EXAMINER	
VAN ROY, TOD THOMAS	
ART UNIT	**PAPER NUMBER**
2828	

DATE MAILED: 05/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

H:A

Office Action Summary	Application No.	Applicant(s)	
	10/631,219	SCHEPS, RICHARD	
	Examiner	Art Unit	
	Tod T. Van Roy	2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 March 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11 and 13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11,13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments, see Remarks, filed 03/23/2006, with respect to claims 1, 7, and 13 have been fully considered and are persuasive. The rejection of the claims has been withdrawn.

The rejection of the claims has been withdrawn due to the fact that the non-steady-state mode of operation was interpreted as relating to the pumped medium, when in fact the non-steady-state operation refers to the pumping source.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3-7, and 9-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Scheps (US 5530711).

With respect to claim 1, '711 discloses a laser (fig.9) comprising a first optically reflective element (fig.9 #39), a second optically reflective element (fig.9 #31e) opposed to and aligned with said first optically reflective element to define a laser cavity having an optical axis, a laser dye gain element (fig.9 #33) having a dye laser dye (col.14 lines 7-9) and which is interposed between said first and second optically reflective elements

along said optical axis for transforming an optical pump signal into a resonant optical signal (col.4 lines 48-60), a laser diode system for generating and injecting said optical pump signal into said laser cavity (fig.9 #18,18') along said optical axis, where said optical pump signal is a sequence of optical pulses (col.19 lines 30-39) having a duration of about $n\tau_f$, where τ_f represents a fluorescence lifetime of said laser dye, and $3<=n<=25$ (col.20 lines 15-20) so that said laser diode system operates in a non-steady-state mode (col.19 lines 30-49, diodes are operated in pulsed mode, which is non-steady-state).

A reference noted but not relied upon speaking towards the fact that pulsed operation is considered non-steady-state is Scheps (US 5307358), at col.1 lines 56-59.

With respect to claims 3 and 4, '711 discloses a laser as described in the rejection to claim 1, and also discloses the dye gain element to be of a host material from the group that includes porous glass, plastic, and sol-gels (col.3 lines 32-34) and further discloses the use of polymethylmethacrylate (col.3 line 34).

With respect to claim 5, '711 discloses a laser as described in the rejection to claim 1, and also discloses the first optically reflective element to have a curved reflective surface (fig.9 #39).

With respect to claim 6, '711 discloses a laser as described in the rejection to claim 1, and also discloses the first and second optically reflective elements to define a nearly hemispherical resonator (col.14 lines 25-31, describing a cavity with the reflective elements located such that a hemispherical laser resonator mode is formed, i.e. forming a hemispherical resonator).

With respect to claims 7, 9-11, and 13, '711 discloses the laser as described in the rejections to claims 1, and 3-5 above, while claims 7 and 9-11 are methods of generating the laser output signal and are hence rejected for the same reasons.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 2 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scheps '711.

With respect to claim 2, '711 discloses the laser device as outlined in the rejection to claim 1 above, but does not explicitly define the pump signal to have a pulse period in the range of 1Khz to 1 Mhz. '711 does however teach that laser diodes can be modulated at a rate exceeding 1 Ghz (col.19 line 49) and that the lifetime of most dyes is several nanoseconds (col.19 lines 65-66). It is further stated that the lifetime of the

laser gain element (being pumped) places an upper limit on the modulation rate that can be achieved (col.19 lines 57-59, meaning that lower modulation rates may be used, falling in the 1Khz to 1Mhz limit, and that the restriction is specifically on the upper limit of the pumped material). Therefor, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the laser device with the 1Khz to 1Mhz pump pulse period in order to properly tune the dye laser to deliver a fixed amount of energy per pulse avoiding damaging optical components (col.20 lines 19-29, and see MPEP 2144.05 (II a&b) speaking on optimization of ranges and effective variables).

With respect to claim 8, '711 discloses the laser as described in the rejections to claims 1, and 2 above, while claim 8 is a method of generating the laser output signal and is hence rejected for the same reasons.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following references teach the use of laser diodes in non-steady-state modes of operation and potential benefits thereof. USPGPUB 2002/0071645 refers to benefits of ***gain switching*** *laser diodes ([0023]), while US 5982789 refers to benefits of using the* ***relaxation oscillation*** *period in laser diodes for pumping (cols.6-7 lines 66-25).*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tod T. Van Roy whose telephone number is (571)272-8447. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun Harvey can be reached on (571)272-1835. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TVR

MINSUN OH HARVEY
PRIMARY EXAMINER